VALUATION OF MINERAL AND ENERGY RESOURCES

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Introduction

- Importance of **NPV method** for measuring natural asset values
- High dependency on assumptions and projections

Three main questions addressed in this guidance note:

1. Is **further guidance** needed to improve and harmonise the measurement of resource rents and NPV calculations?
2. Are **alternative valuation techniques**, currently being developed in the context of ecosystem accounting, relevant for the SEEA-CF and SNA?
3. Are there **specific natural resources** for which valuation methods have recently evolved, and therefore should be translated into additional accounting guidance?

Question 1: Further guidance?

- Para. 29.103 and 29.105 of **2008 SNA** address extending SNA to incorporate aspects of SEEA.
- **Chapter 5 of the SEEA-CF** contains comprehensive discussion of the valuation of natural resources.
- Two **AEG documents** examined valuation of natural resources by combining SEEA-CF approach with the SNA.

Classification

- Include further clarifications on the **delineation of mineral and energy resources**, by relying on the same three resource classes as in SEEA 2012:
  - Commercially recoverable resources
  - Potentially commercially recoverable resources
  - Non-commercial and other known deposits
- When reliable information on their value exists, include these three classes in the national accounts, provided that **separate estimates** can be compiled for the different classes.

Valuation (1)

- Underline that aim is to compile **market values**, not social values.
- Add clarifications on **calculation of NPV** for natural resources:

$$V_t = \sum_{s=0}^{S} \frac{p_{t+s} \cdot q_{t+s} - C(q_{t+s})}{(1+r)^{t+s}}$$

- p: output price
- q: quantity
- C: extraction cost

S: asset life
r: discount rate

  - Use constant **rate of extraction** or most recent quantity of extraction as forecasts of future production
  - Assume that **output price** of extracted resource follows a long-run historical trend
  - Refer to Chapter 5 of SEEA-CF for guidance on other elements, such as **depletion**, **opportunity costs** and **discount rate**
  - Compilers should try to compile values at **disaggregated level**

Valuation (2)

- Emphasise **specific compilation issues**:
    1. Sensitivity of results to the choice of the discount rate
    2. Heterogeneity of extraction costs across space
    3. Constraints imposed on mineral production at the micro level by initial investments in physical capital
    4. Volatility in the value of mineral assets introduced by short-run price fluctuations of commodity prices

Question 2: Alternative valuation techniques?

- Valuations should be based on **market prices**
- **Imputations** are allowed when market prices are not available, e.g. market prices of similar products or hedonic methods based on product characteristics
- Some of the alternatives employed in **SEEA** are examples of these kinds of imputations
- **Simulated exchange values** or **willingness-to-pay** do not qualify and should not be incorporated into the SNA
- Separate **group on valuation** will provide more guidance on principles and methodologies for valuing transactions and positions

Question 3: Specific natural resources

- The main focus on this guidance note has been on non-renewable energy resources
- Other GN focuses on **renewable energy resources**
- Also important to distinguish cultivated assets
- Important role of **proper classification** (see specific GN on classification issues)

Questions for AEG

- Do you agree to refer to the same three resource classes as in SEEA 2012 and to recommend their inclusion in NA, provided that separate estimates can be compiled?
- Do you agree to add clarifications on NPV calculation for mineral and energy resources, by explicitly referring to Chapter 5 of the SEEA-CF?
- Do you agree to add clarification that the value of mineral and energy deposits should be compiled at a disaggregated level (ideally at the deposit level)?
- Do you agree to emphasise specific compilation issues?
- Do you have any other comments with regard to the guidance note?
- Do you consider the guidance note ready for global consultation?